

ARS Climate Change Research

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National Program Leader
Climate Change, Soils & Emissions
Program

Research Portfolio

- Mitigation

- GHG emissions (N_2O , CH_4): economic loss
 - GRACEnet
- Carbon sequestration: soil health

- Adaptation

- Understanding climate change impacts on ag
 - Direct (abiotic) & Indirect (biotic)
- Developing sustainable crops & cropping systems
- Investigating opportunities

Mitigation Update

- CAST report on croplands GHG & C sequestration – core is ARS white paper
- U.S. Agriculture & Forestry GHG Inventory
 - 1990-2008
- GRACEnet book – research results (June)
 - Contributions from K. Steenwerth
- On-line GRACEnet sampling reference
- International collaboration interest: GRA
- New fertilizer technologies: lower GHG +
 - Slow release, biotic
- Agro chemical application insights: emissions significant

Adaptation Update

- USGCRP & USDA: increasing emphasis
 - Agency mission impacts & adaptation
 - Risk management, monitoring, user info needs
- Other ARS programs
 - ARS project inventory for relevance
- ARS internal dialogue
- ARS-APHIS discussions: risk management decision support research

National Climate Assessment Technical Reference Document

- NCA Congressionally mandated: 4-5 year cycle
- 51 person FACCA: 4 on ag liaison team
- Lead author team: Walthall & Hatfield (ARS co-leads), Lengnick (Warren-Wilson College/ARS visiting scientist), Marshall (ERS), Backlund (NCAR)
- 52 other ag authors: ARS, University, International

Technical Reference Document

- What's new for agriculture
 - Stand-alone document
 - Climate change effects on
 - Soils
 - Specialty crops
 - Ecosystem services
 - Water
 - Business of agriculture & economics
 - Adaptation
- Climate projection maps (CMIP3)
- Scientific document: 1500+ references

Synthesis

- Biotic effects: increase input costs
 - Insects, pathogens, weeds, invasives
- Generations
 - Future producers: more climate as decision-making criteria
- International impacts
 - Market force: yields
 - Trade: biotic effects & APHIS inspections
- Adaptation
 - “Fluid” process by producers
 - Infrastructure, policy, insurance impacts
- Conservation practices critically important
- Climate smart *crops & production systems*
- Communication & literacy

NP212

- 5 year research cycle ending 2013
 - Retrospective report
 - Assess program success via OSQR panel
- Planning for next 5 years
 - Stakeholder input
 - Setting priorities: action plan
 - OSQR review
- More climate impacts & adaptation assessment activities

Need to hear experiences & concerns
about climate change!!

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